

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) ~~Process~~ A process for manufacturing transglycosylation products, ~~according to which process comprising the steps of:~~

- ~~reacting a starch derivative ester or starch ether is reacted~~ at acidic conditions with an alkanol containing 1 ~~[[--]]~~ to 6 hydroxyl groups ~~in the presence of an acidic catalyst in a transglycosylation reaction to form a reaction mixture, wherein said acid catalyst comprises phosphorous, and~~

- ~~the reaction recovering a transglycosylation product is recovered as such, or [[it]]~~ subjecting the transglycosylation product ~~is subjected~~ to further processing,

characterized in that

- ~~the transglycosylation reaction between the starch derivatives and the alkanol is carried out performed~~ in a reactive extrusion process essentially without any medium, and

- ~~the reaction mixture is conducted through an extrusion device via at least two separately adjustable heating zones, thereby providing control of heat introduced externally into the reaction mixture,~~

wherein the acidic catalyst is a phosphorus-containing acid selected from at least one of the group consisting of: phosphoric acid, H_3PO_4 , hypophosphorous acid, H_3PO_2 , and phosphorous acid, H_3PO_3 , and

wherein the catalyst is allowed to chemically bond with the transglycosylation product.

2-4. (Cancelled)

5. (Currently Amended) The process according to claim 1, ~~characterized in that~~ wherein the extrusion temperature is within the range of ~~approx. approximately~~ 105 to 200 °C, ~~preferably within the range of approx. 110 to 190 °C.~~

6. (Currently Amended) The process according to claim 1, ~~characterized in that,~~ wherein prior to ~~performing~~ the transglycosylation reaction, the alkanol and the acidic substance catalyst are mixed together to form a first reaction mixture, ~~[[and]]~~ thereby producing an aerosol is ~~produced from this mixture, [[and]]~~ wherein the aerosol is added to the starch derivative at a dose corresponding to ~~[[the]]~~ a desired molar mass of the ~~[[end]]~~ transglycosylation product to produce a pre-mixture.

7. (Currently Amended) The process according to claim 6, ~~characterized in that~~ wherein the amount of ~~the~~ alkanol is ~~approx. approximately~~ 0.01 to 20 weight-%, ~~preferably 0.1 to 10 weight-%,~~ of the mass of the starch derivative ~~ester or the starch ether,~~ and wherein the amount of the alkanol is ~~approx. approximately~~ 0.0005 to ~~approx. approximately~~ 5 mole-%, ~~preferably approx. 0.002 to approx. 2.0 mole-%, in particularly approx 0.015 to 0.3 mole-%,~~ of the amount of the starch derivative used ester or the starch ether.

8. (Currently Amended) The process according to claim 6 or 7, ~~characterized in that~~ wherein the alkanol and the acidic substance catalyst are ~~[[fed]]~~ supplied in aerosol form ~~[[into]]~~ to a fluidised-bed type of a mixing device, in which they wherein the alkanol and acidic catalyst are mixed with a powdery starch derivative to produce the pre-mixture.

9. (Currently Amended) The process according to claim 6, ~~characterized in that wherein~~ the concentrations of ~~the~~ alkanol and the acidic ~~substance~~ catalyst and of any liquid chemicals are selected such that the total amount of liquid ~~will be~~ is less than 30 %, ~~preferably approx. 5 to 25 %~~, of the dry matter content of the pre-mixture ~~containing the starch derivative~~.

10. (Currently Amended) The process according to claim 5, ~~characterized in that wherein~~ the reaction mixture is compacted ~~and, where necessary, granulated yielding a compacted pre-mixture~~, prior to ~~feeding it into~~ supplying the reaction mixture to the extrusion device.

11. (Currently Amended) The process according to claim 10, ~~characterized in that wherein~~ the compacted pre-mixture is ~~fed into~~ supplied to the extruder extrusion device to serve as ~~the~~ reaction mixture, ~~wherein the extruder extrusion device being of is~~ either ~~[[the]]~~ a 1- or 2-screw type extrusion device.

12. (Currently Amended) The process according to claim 1, ~~characterized in that wherein~~ the starch ~~derivative~~ ester or starch ether comprises a product manufactured from native starch by means of oxidizing, hydrolyzing, cross-linking, cationizing, grafting, etherification or esterification.

13. (Cancelled)

14. (Currently Amended) The process according to claim 1, ~~characterized in that~~ wherein the alkanol ~~[[used]]~~ is a lower alkanol with 1 to 6 carbon atoms ~~[[,]]~~ and 1 to 5, ~~preferably 1 to 3,~~ hydroxyl groups.

15. (Currently Amended) The process according to claim 14, ~~characterized in that~~ wherein the alkanol is selected from at least one of the group consisting of: methanol, ethanol, n-propanol, isopropanol, n-butanol ~~and sec., sec~~ butanol, ~~a substituted lower alcohol, e.g. methoxy methoxy ethanol, etoxy ethoxy ethanol, methoxy methoxy methanol, or etoxy ethoxy methanol, or an alcohol containing 2 or 3 hydroxyl groups, e.g. ethylene glycol, propylene glycol~~ ~~[[or]]~~ and glycerol.

16. (Currently Amended) The process according to claim 1, ~~characterized in that~~ wherein the acid catalyst ~~used is a strong mineral acid, such as~~ is selected from at least one of the group consisting of: sulphuric acid, hydrochloric acid, nitric acid, ~~strong organic acid, such as~~ paratoluene sulphonic acid, methane sulphonic acid, benzene sulphonic acid ~~[[or]],~~ trifluoromethane sulphonic acid ~~or mono- or polyalkylated aryl mono- or polysulphonic acid, such as,~~ xylene sulphonic acid ~~[[or]],~~ cumene sulphonic acid ~~[[or]],~~ and dodecyl benzene sulphonic acid, ~~or an acidic ion exchange resin.~~

17-21. (Cancelled)

22. (New) The process according to claim 1, wherein the extrusion temperature is within the range of approximately 110 to 190 °C.

23. (New) The process according to claim 6, wherein the amount of the alkanol is approximately 0.1 to 10 weight-% of the mass of the starch ester or the starch ether.

24. (New) The process according to claim 6, wherein the amount of the alkanol is approximately 0.002 to approximately 2.0 mole-% of the amount of the starch ester or the starch ether.

25. (New) The process according to claim 6, wherein the amount of the alkanol is approximately 0.015 to 0.3 mole-% of the amount of the starch ester or the starch ether.

26. (New) The process according to claim 6, wherein the concentrations of the alkanol and the acidic catalyst and of any liquid chemicals are selected such that the total amount of liquid is approximately 5 to 25 % wt-% of the dry matter content in the pre-mixture.

27. (New) The process according to claim 5, wherein the reaction mixture is compacted and granulated prior to feeding it into the extrusion device.

28. (New) The process according to claim 1, wherein the alkanol is a lower alkanol with 1 to 6 carbon atoms and 1 to 3 hydroxyl groups.

29. (New) The process according to claim 14, wherein the alkanol is selected from the group consisting of: a substituted lower alcohol, an alcohol containing two hydroxyl groups, and an alcohol containing three hydroxyl groups.

30. (New) The process according to claim 1, wherein the acid catalyst is selected from at least one of the group consisting of: a strong mineral acid, mono-polyalkylated aryl monosulphonic acid, mono-polyalkylated polysulphonic acid, polyalkylated aryl mono-sulphonic acid, polyalkylated aryl polysulphonic acid, and an acidic ion exchange resin.